



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/664,425

09/17/2003

Martin R. Prince

1676.008US1

3209

21186

7590

07/07/2008

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.

P.O. BOX 2938

MINNEAPOLIS, MN 55402

EXAMINER

BITAR, NANCY

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

07/07/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/664,425	Applicant(s) PRINCE ET AL.	
	Examiner NANCY BITAR	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-14,16,17,19-21,32,34-36,38 and 39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-14,16,17,19-21,32,34-36,38 and 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

I. The declaration under 37 CFR 1.132 filed 04/15/2008 is insufficient to overcome the rejection of claims 1-4,6-17,19-21,31-39 based upon “ Post processing Technique for time resolved contrast enhanced MR Angiography” as set forth in the last Office action because:

While the declaration attributes the portions of the article relied upon by the examiner to the applicants Martin R. Prince, Ramin Zabih, Yi Wang and Richard Watts, and while the declaration removes authors Stanley K. Yoo and Priscilla A. Winchester as contributors to the claimed invention, the declaration does NOT address the remaining applicants Junhwan Kim, Jeff Bezanson and Hale Ersoy with respect to their contribution to the article and/or claimed invention (or lack thereof). Therefore, in light of the declaration, the authors of the article are effectively Martin R. Prince, Ramin Zabih, Yi Wang and Richard Watts, and the applicants of the application are the aforementioned authors plus Junhwan Kim, Jeff Bezanson and Hale Ersoy. In light of this, the authorship remains different from the inventive entity and the article remains valid prior art under 102(a). Moreover, Applicant refers in page 6 of the arguments filed 04/15/2008 to MPEP § 714.03(a) that addresses supplemental amendment which does not refer to the 132 attribution according to MPEP § 716.10

Drawings

2. The drawings filed 03/19/2008 has been accepted by the examiner. The drawing objection has been withdrawn,

Examiner Notes

3. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-4,6-14,16-17,19-21,31-32,34-36,38-39 are rejected under 35 U.S.C. 102(a) as being unpatentable by Yoo et al (Post processing Techniques for Time resolved Contrast-enhanced MR Angiography, January 7,2002) .

As to claim 1, Yoo et al teaches a method comprising: receiving a time sequence of magnetic resonance images for a region, each image having a plurality of pixels and wherein a

Art Unit: 2624

contrast agent is introduced into the region at an introduction time occurring during the time sequence (N =the total number of images , Material and Methods, Post processing technique part);selecting a first subset of at least one image from the time sequence of magnetic resonance images, each image of the first subset corresponding to a time prior to the introduction time; selecting a second subset of at least two images from the time sequence of magnetic resonance images, each image of the second subset corresponding to a time subsequent to the introduction time (mask images were obtained before administration of the contrast material and prior to the arrival in the arterial phase at the trifurcation. Material and Method part , Imaging, paragraph 2);calculating a mask image (mask image set (M)) as a function of corresponding pixels of each image of the first subset (mask images were obtained before administration of the contrast material and prior to the arrival in the arterial phase at the trifurcation, Material and Method part, 2nd paragraph);calculating an arterial image(arterial phase image set (A)) as a function of corresponding pixels of each image of the second subset; and generating a composite image (generate a linearly filtered image) as a function of a difference between each pixel of the mask image and a corresponding pixel of the arterial image (subtraction by using a default mask (image 5 of the 35 serial images) was performed to identify the peak arterial phase (maximal arterial signal). Then the identified peak arterial phase image was used as a mask, and subtraction was performed again to identify the optimal mask among the images obtained before contrast enhancement (ie, the one with minimal background, Material and Method part, , post processing technique,) .

As to claim 2, Yoo et al teaches the method of claim 1 wherein receiving the time sequence includes receiving images having pixels represented by complex numbers (note that MR data are complex, Introduction, paragraph 3).

As to claim 3, Yoo et al teaches the method of claim 1 wherein generating the composite image includes calculating a magnitude for each pixel (the arterial phase images could be displayed as a video loop and provide equivalent or more information to the observer than would a summary image, discussion part).

As to claim 4, Yoo et al teaches the method of claim 1 further including at least one of displaying the composite image and storing the composite image (note that using the computer to generate a single composite image, discussion part).

As to claim 6, Yoo et al teaches the method of claim 1 wherein the first subset includes at least two images and wherein calculating the mask image includes calculating an average pixel as a function of corresponding pixels of the at least two images (Let the final image be s , the time series S_n , and its average \bar{s} , Material and Method part, Postprocessing technique , paragraph 4).

As to claim 7 and 14 , Yoo et al teaches the method of claim 1 further comprising displaying, on a computer monitor, and distinguishing at least one image of the time sequence of magnetic resonance images (using the computer to generate a single composite user image, discussion part, paragraph 2).

The limitation of claims 8-13 has been addressed “manually selected mask image set (M) and arterial phase image set (A) was used to generate a linearly filtered image, paragraph Post processing Techniques).

The limitation of claims 16-17 and 19 are user choice and Yoo et al teaches a computer were all these functions can be performed by the radiologists.

As to claim 20 and 21, Yoo et al teaches the method of claim 19 wherein determining the introduction time includes: calculating a quality measure for each image of the time sequence of magnetic resonance images; and selecting the introduction time as a function of a rate of change of the quality measure for each image relative to the time sequence (Summary of Image Quality Comparison Results on the Five-Point Scale, table 3).

The limitation of claims 31-32, 34-36, 38-39 have been addressed above.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W. Johns/
Primary Examiner, Art Unit 2624

Nancy Bitar

07/02/2008